

COASTAL ARCHAEOLOGY IN VICTORIA PART 1: THE MORPHOLOGY OF COASTAL ARCHAEOLOGICAL SITES

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INTRODUCTION

Of Victoria's archaeological sites those on the coast are amongst the most obvious, the most numerous, the most vulnerable to damage and potentially the richest sources of information about the prehistoric past. As an interface between the productivity of the sea and the productivity of the land, the coastal environment normally offers relatively abundant and reliable sources of food. Consequently, archaeological studies of coastal sites provide a record of settlement patterns very different from those associated with inland sites.

In Part 1 of this paper an up-to-date review of the data available from the records of the Victoria Archaeological Survey and from published documents is presented. In particular, an attempt will be made to define the various types of sites found on the coast, to indicate their distributions, to assess their states of preservation and to look at cultural variability. In Part 2, aspects of the Aborigines' adaptations to changes in coastal environments will be examined.

THE SOURCES

In 1975 the Town and Country Planning Board commissioned the Victoria Archaeological Survey to produce a report on coastal archaeological sites of special scientific interest in Victoria. After a short period of intensive fieldwork a comprehensive report was prepared (Coutts *et al.* 1976). It reviewed the literature on Victorian coastal sites and stressed the urgent need for more comprehensive field studies. It also documented the degree of preservation of coastal archaeological sites. Areas of the coast were classified according to their potential archaeological significance and management procedures were outlined for the most important areas. The present review uses much of the material published in that report and the reader is

referred to it for further details and a detailed bibliography.

Since 1976 more data on coastal sites have become available. Lourandos (1976) has published some preliminary comments on his excavations at Bridgewater Caves, near Cape Bridgewater and at Seal Point, Cape Otway. Willacy (pers. comm.) has been recording Aboriginal sites on Phillip Island. Hughes and Wesson (1978) carried out a survey at Point Wilson, near Geelong and Wesson and Clark (1980) have surveyed the area around Point Danger, near Portland. Surveys of coastal areas commissioned by private and government authorities cover parts of Marilyns Beach (Clark & Pickering 1978), the area between Jack Smith Lake and Lake Denison (Bell & Clark 1977, Witter *et al.* 1976) and part of the Ninety Mile Beach north-east of Loch Sport (Bell *et al.* 1977, Simmons & Irish 1977).

Archaeological surveys have been made of the coastline between Warrnambool and Yambuk, an area near Glenaire, strips of coastline between Cape Paterson and Wonthaggi, the coastal strip south of Lake Reeve, the coastline between Tamboon Inlet and Cape Everard, Gabo Island and some parts of Mallacoota Inlet (Fig. 1). During these surveys, excavations and test pits were completed at Captain Stevensons Point and Top Lake near Mallacoota, Gabo Island, and Goose Island, The Craigs, Pickering Point, Reamur Rocks, Thunder Point and Armstrong Bay in the vicinity of Warrnambool and Port Fairy, western Victoria (Coutts 1977, 1978a, Coutts & Witter 1977). Archaeological surveys of the Mornington Peninsula and the Discovery Bay area are underway at present.

TYPES OF COASTAL ARCHAEOLOGICAL SITES

Aboriginal sites may be classified in many ways, depending on the use to be made of the classifica-

tion. The Victoria Archaeological Survey uses a system in which environmental setting, contents, assumed functions and state of preservation are considered. Six broad coastal site types have been defined, based on a study of 647 sites from the study areas (Fig. 2).

1. MIDDENS

These consist of shells mixed with charcoal fragments, stone flakes, pebbles and bone in varying proportions. The deposits may vary in area and thickness. In many instances all the sediments covering the *in situ* material have been eroded and the midden material is scattered on the surface. Once these sites have been exposed they erode rapidly.

2. SURFACE SCATTERS

These consist of stone material, probably derived from middens which have disappeared, or from workshops where stone tools were manufactured. Evidence from this type of site is often ambiguous, since materials from different phases of occupation may be mixed through deflation. Nevertheless, many workshops have survived, and their careful assessment may enable the technological processes associated with the production of stone tools to be determined (e.g. Witter 1977).

3. QUARRY SITES

These sites vary in character, but normally comprise piles of debitage found near sources of raw material suitable for making stone tools. Most of these sites found in the coastal region are small in comparison with those found inland.

4. AXE-GRINDING SITES

These are shallow depressions formed as a result of grinding down axe blanks or sharpening axes. They are normally found on outcrops of sandstone and are rare throughout Victoria.

5. SCARRED TREES

These are trees from which bark has been cut. Observers frequently give functional names to these trees (e.g. canoe trees), but in many instances it is not possible to determine the reason for the bark being cut. It is also often difficult to determine if a scar has formed naturally or not.

6. STONE STRUCTURES

These are mostly stone alignments, found in rivers or creeks or in situations which suggest an

Aboriginal origin. Those in streams may have been used as weirs or for trapping eels and other fish (Coutts *et al.* 1978). Other alignments, on higher ground, could have served ceremonial functions or been used as habitations (e.g. Coutts *et al.* 1977).

STATE OF PRESERVATION OF SITES

Scarred trees, and the rarer sites such as fish traps and axe-grinding grooves are, in general, fairly well preserved. Information on the state of preservation of 154 coastal middens shows that all sites have been damaged. Only 25% still have some *in situ* material, 21% have been so badly damaged that they are of little or no use for research, and the remainder are between these extremes. Surface scatters are also poorly preserved.

Over the past few years evidence for erosion of the coastline at several points has been recorded. There can be no doubt that many recent sites have already disappeared and others are threatened. Consequently, our concept of the original distribution, variety and density of recent sites may be false.

DATING COASTAL SITES

Fish traps, quarries and axe-grinding sites have not been dated at all, but many may have been in use at the end of the prehistoric period since they are still fairly well preserved. Scarred trees are difficult to date, though most cannot be older than a few hundred years. Most surface scatters can be dated only roughly from the presence or absence of certain types of key tools such as backed blades.

In general, middens along the present coastline cannot be much older than about 6 000 B.P. (when the coastline last stabilised) and most are younger. Radiocarbon dates available for Victorian coastal archaeological sites (Table 1) range from 17 000 B.P. to the present in the hinterland and from 6 500 B.P. in the foreland.

SITE DISTRIBUTION

Natural resources of the coastal region vary greatly and it is held that their distribution will affect the type, location and relative density of archaeological sites. Further, when sites are found near several different environments, their contents will reflect this environmental diversity.

The Victorian coastal region has been classified into 14 zones (Fig. 2) (after Coutts *et al.* 1976) according to physiography of the coastline, availability of natural resources, and original

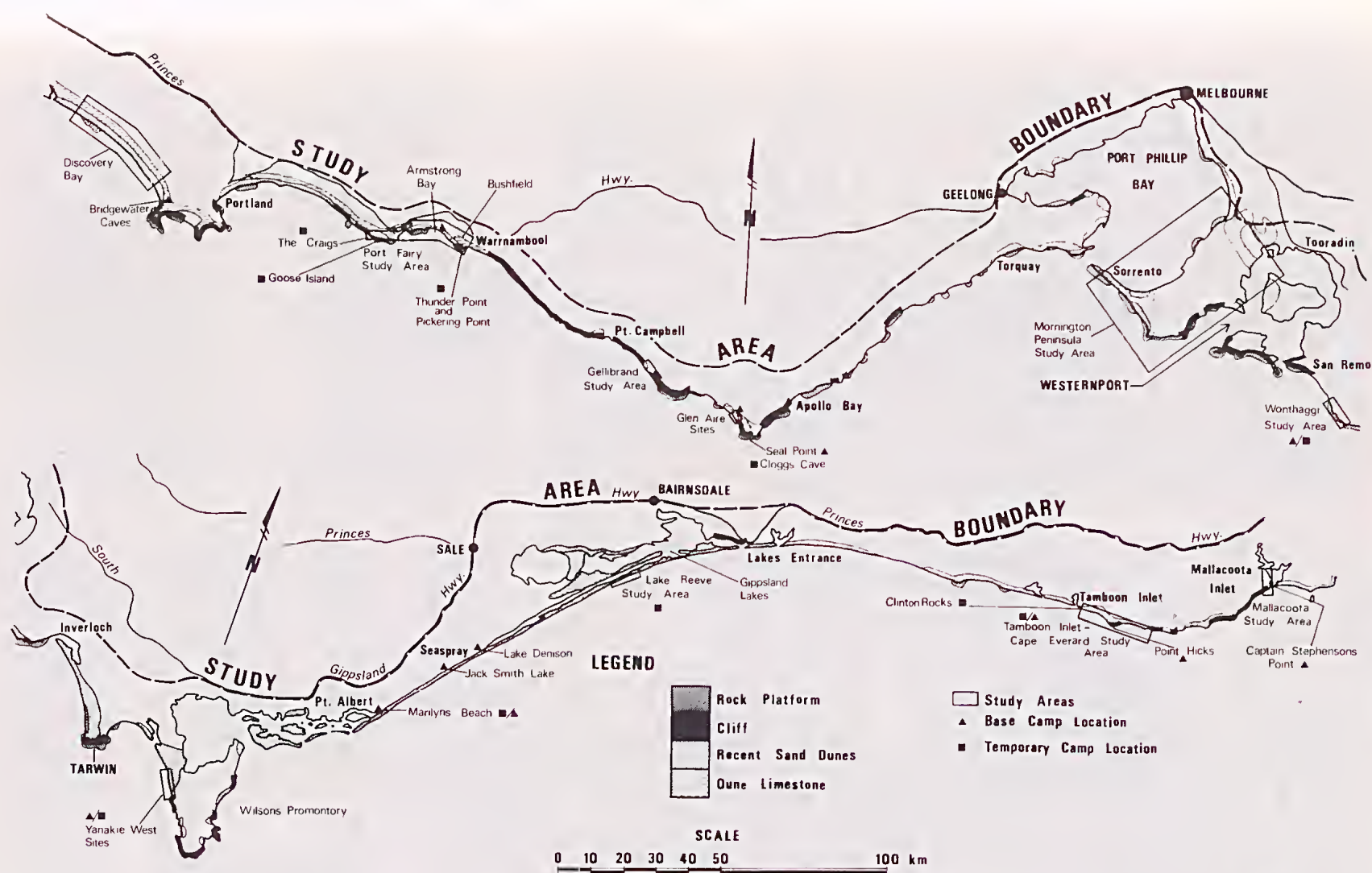


FIG. 1—Distribution of major foreland and littoral types and locations of sites mentioned in text

vegetation patterns. Each zone has different potential food resources associated with its major habitats (Coutts *et al.* 1976), but many of these are seasonal and their importance to Aboriginal populations at any time must be weighed against the importance of alternative food resources available in the hinterland.

Availability of other resources such as water, stone and organic materials must also be considered. For example, eucalypt bark was an important material in Victorian Aboriginal culture (e.g. Smyth 1878), so the position of eucalypt forests in relation to the foreland may have influenced campsite location. Lastly, while prehistoric populations may have had access to a variety of natural resources, they would have needed an appropriate technology to take advantage of them. For example, seaworthy craft would have been a prerequisite for offshore fishing (Lampert & Hughes 1974).

The distribution of 647 coastal Aboriginal sites is summarised in Table 2 but since only obvious and visible sites have been recorded the data are of limited value for quantitative analysis.

The locations of rarer types of sites such as axe-grinding grooves, quarries and fish traps which tend to be function specific, seem to be decided more by geographic and geological factors than the availability of food resources. Similarly, scarred trees are only found in the hinterland, as no suitable trees grow on the foreland.

Surface scatters are found in about the same proportions in both the foreland and the hinterland. Assemblages in the two areas can sometimes be distinguished on the basis of the type, variety and frequency of occurrence of artefacts in them. This distribution is not unexpected, since stone tools would have been required in both areas.

Middens are most common on cliff tops and dune systems in the foreland, since these areas are generally near food resources being exploited (Coutts 1966: 345).

To illustrate some factors affecting location of midden sites, one study region was examined in more detail (Fig. 3). The area includes 25 km of sandy coastline with 43 middens and two surface scatters. Only 10 sites have some *in situ* material left; the remainder have very little research potential.

Sixty per cent of the sites are fronted by sandy beach and in some instances the nearest rock platforms are as much as 5 km away. The rest are located near rock platforms (see Table 3). All sites (except the two surface scatters which have no

associated food refuse), have a predominance of rock platform molluscs (*Brachidontes*, *Mytilus*, *Subnina*, *Cellana* and *Dicathais*). Molluscs from sandy beaches were found at only three sites, two of which are within 100 m of both rock platforms and sandy beaches. The third site is about 2 km from the nearest rock platform. Most sites are also within easy reach of estuaries (normally less than 5 km), yet no estuarine fauna have been found in any of the sites.

Possible explanations for a predominance of rock platform shellfish include gastronomic preferences, the possibility that sandy beach shellfish were scarce in this area and preferences for shellfish species that had a high energy yield for a relatively modest energy outlay (see Table 4). All of the sites lie well within the 5-15 km considered (Gould 1969: 12, Howitt 1904: 767, Tindale 1972: 242 ff) to be the daily foraging range of hunter-gatherers (Table 3).

A similar study of data from other coastal regions confirms that most coastal midden sites are situated in sandy environments and that the preferred food resource was shellfish from rocky shorelines (Fig. 4).

CLASSIFICATION OF MIDDEN SITES

Middens result from many different activities, including bone and stone tool manufacture and butchering and cooking food. A detailed study of the contents of some of the middens and surface scatters in each of the study areas suggested four broad categories:

1. SHELLFISH REFUSE HEAPS

These are little more than heaps of discarded shells, with occasional flakes, charcoal and faunal remains. Such sites are function specific and occur in all environments. They were probably occupied briefly while locally collected shellfish were eaten. Typical sites include Clinton Rocks, Thunder Point and The Craigs, all of which overlook rocky shores.

2. BASE CAMPS

These contain the remains of shellfish and other animals, stone and bone artefacts, charcoal, hearth stones and evidence of stone tool manufacture. Such sites occur in all environments and were bases from which foragers exploited the resources of the surrounding landscape. Typical sites are found at Wilsons Promontory, Captain Stevensons Point, Point Hicks, Glenaire and Armstrong Bay.

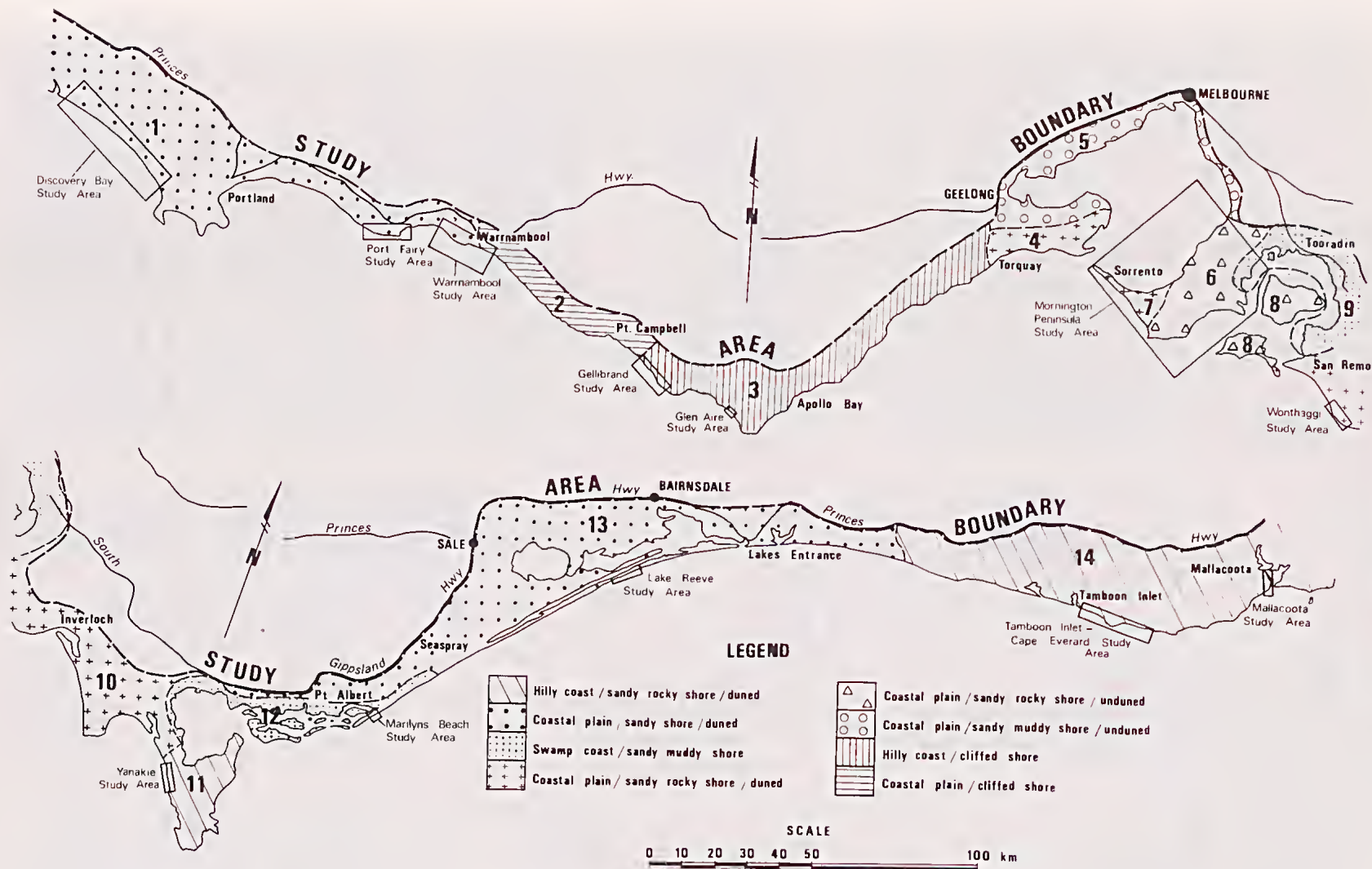


FIG. 2—General coastal landform units

TABLE 1
RADIOCARBON DATES FROM VICTORIAN COASTAL ARCHAEOLOGICAL AND GEOLOGICAL SITES

<i>Site name</i>	<i>Type of site</i>	<i>Material</i>	<i>Date B.P.</i>		<i>Reference</i>
ARCHAEOLOGICAL SITES					
Foreland					
Glenaire	rock shelter, base camp	charcoal	370 ± 45	NZ-367	Mulvaney 1962:5
Wilsons Promontory					
YW9A/5	A series, base camp	charcoal	3,060 ± 100	GaK-681	Coutts 1970:25
		charcoal	6,550 ± 100	GaK-683	Coutts 1970:25
YW11/1	A series, base camp	charcoal	3,920 ± 90	GaK-968	Coutts 1970:25
YW9A/6	A series, base camp	charcoal	3,480 ± 90	GaK-970	Coutts 1970:25
YW9A/2	B series, temporary camp				
		shell	2,840 ± 90	GaK-6-80	Coutts 1970:25
		charcoal	1,260 ± 90	GaK-682	Coutts 1970:25
Tarwin	A series, ?	charcoal	6,010 ± 110	Gak-971	Coutts 1970:25
Pt. Hicks	B series, base camp	charcoal	1,425 ± 100	SUA-573	Coutts & Witter 1977:73
Clinton Rocks	B series, temporary camp				
		charcoal	220 ± 90	SUA-378	Coutts & Witter 1977:73
		charcoal	360 ± 90	SUA-377	Coutts & Witter 1977:73
Thunder Point	A series, temporary camp				
		charcoal	840 ± 98	SUA-674	Coutts 1978a:5
		charcoal	4,130 ± 200	SUA-675	Coutts 1978a:5
The Craigs	A series, temporary camp				
		charcoal	780 ± 95	SUA-775	Coutts 1978a:5
		charcoal	2,265 ± 100	SUA-774	Coutts 1978a:5
Goose Island	A series, temporary camp				
		charcoal	425 ± 95	SUA-776	Coutts 1978a:5
Goose Lagoon	A series, temporary camp				
		charcoal	1,177 ± 175	Libby	Gill 1955b:50
Armstrong Bay					
lower soil horizon	B series, base camp				
		shell	4,315 ± 195	GX-0059	Gill 1967:357
		charcoal	5,120 ± 120	GaK-610	Gill 1967:357
		shell	1,750 ± 115	GX-0060	Gill 1967:357
upper soil horizon	B series, base camp				
		charcoal	2,800 ± 100	Gak-611	Gill 1967: 357
		charcoal	538 ± 200	Libby	Gill 1955a
		charcoal	2,450 ± 100	SUA-673	Coutts 1978a:5
		charcoal	1,280 ± 80	GaK-1730	Campbell 1967
		charcoal	5,680 ± 120	GaK-1729	Campbell 1967
Pickering Point	A series, ?	shell	7,300 ± 150	GaK-2856	Gill 1972; 1973:135
Hinterland					
Cloggs Cave	temporary camp				
		charcoal	17,720 ± 840	ANU-1044	Flood 1974:177
		charcoal	8,720 ± 230	ANU-1001	Flood 1974:177
East Buchan	?	charcoal	2,760 ± 100	GaK-512	Anon. 1966:24
GEOLOGICAL SITES					
Bushfield	open site, eroding				
		bone	6,605 ± 190	GX-0151	Gill 1967:357
Merri Canal	open site				
		shell	6,500 ± 200	Ac-15	Gill 1967:357
Lake Pertobe	open site				
		shell	5,840 ± 320	Ac-14	Gill 1967:357
Moulden Quarry	open site				
		shell	3,750 ± 150	GX-0058	Gill 1967:357
		shell	6,570 ± 115	SUA-780	Gill (pers. comm.)
Dennington	open site				
		laminated	8,700 ± 150	GaK-3920	Gill 1973:135
		mammillary calcite			

3. HEARTHES

These normally consist of a few waterworn pebbles or fragments of calcarenite arranged in the shape of a hearth. They may be associated with some charcoal and occasionally with small flaking floors. Such sites are quite common at Discovery Bay and Wilsons Promontory and have been found occasionally in other coastal areas.

4. WORKSHOPS

Typically these are locations where flint nodules were flaked. In some instances the stone fragments from these activities can be collected and the original cores pieced back together (Coutts 1978 b: plate 30). Such sites usually occur on very eroded sections of the coast and may be associated with other refuse from middens. The best examples of this type of site found so far are at Discovery Bay where large areas of the coast are peppered with flint flakes.

CULTURAL VARIABILITY

The regional and chronological context of cultural variability is necessary for its understanding. However, there are still only a few well documented coastal sites in Victoria and discussion has been restricted to a comparison of base camps and temporary camps in eastern and western Victoria.

WESTERN VICTORIA

Temporary camps have been investigated in the foreland at Thunder Point and The Craigs, near Port Fairy and base camps excavated at Armstrong Bay, near Port Fairy, Seal Point and Glenaire near Cape Otway and Bridgewater near Portland.

Temporary camps

The sites at Thunder Point and The Craigs (Coutts 1977, Coutts & Witter 1977, Coutts *et al.* 1976) are typical temporary camps. They consist of heaps of shell mixed with charcoal, shallow hearth pits and hearth stones, the remains of crab and crayfish, a few stone flakes, fragments of ochre, and occasionally fragments of bone from land animals. Evidence from both these sites suggests that Aborigines came to the coast to collect shellfish, particularly *Subnirrella undulata*, from the rock platforms. The shellfish and occasionally some other animals were carried to the top of the dunes where they were eaten and the debris was thrown into heaps. This practice persisted from before 4 400 B.P. to at least 800 B.P.

TABLE 2

PERCENTAGE INCIDENCE OF EACH TYPE OF SITE IN VARIOUS ENVIRONMENTS

Location of site	Percentage of each type of site in that locality							Total no. of sites
	M	SS	ST	FT	Q	AG	U	
Foreland:								
Dune systems	61	38			1		1	192
Beside swamps	61	33					6	18
Cliff top	64	33			1		3	97
Hillsides	67	33						9
Hinterland (excluding scarred trees):								
Coastal plain	41	27		4	4	19	5	70
Beside lakes/swamps	42	42				8	8	12
Upland/hillsides	61	15			8	8	8	13
Hinterland (including scarred trees):								
Coastal plain	12	8	70		1	6	1	230
Beside lakes/swamps	8	8	82			2	1	65
Upland/hillsides	22	6	64		3	3	2	36

M— middens and rock shelters

SS— surface scatter

Q— quarry

ST— scarred tree

AG— axe grinding

FT— fish trap

U— unspecified

Base camps

Although the sites at Armstrong Bay (Tower Hill Beach) have never been extensively investigated, they appear to be base camps. No animal bones have been found *in situ*, but earlier researchers consider that many of those collected in the area derived from eroding midden deposits. These include the remains of whales, seals, fish and other marine animals, snake, Tasmanian devil, kangaroo, wombat, native cat, silvery-grey possum, ring-tail possum, bandicoot, rat, rufus-bellied wallaby, rat kangaroo, tiger cat and short-nosed bandicoot (Gill 1951, Mahony 1912). Human remains have also been found there. Although several radiocarbon dates ranging from 538 ± 200 to 5680 ± 120 B.P. are available (Table 1), the provenance and associations of these dates are not always clear.

TABLE 3
RELATIONSHIP BETWEEN DISTANCE OF SITES FROM ROCK
PLATFORMS AND PERCENTAGE OF SITES ADJACENT TO
SANDY BEACHES IN THE TAMBOON INLET—CAPE
EVERARD STUDY AREA

Distance of sites from rock platform (km)	Percentage of sites situated adjacent to sandy beach environments	Per- centage of all sites
0 -0.5	38	58
0.6-1.0	0	0
1.1-1.5	4	4
1.6-2.0	21	13
2.1-2.5	7	4
2.6-3.0	7	4
3.1-3.5	4	2
3.6-4.0	0	0
4.1-4.5	7	4
4.6-5.0	0	9
Total number of sites	29	45

Recent preliminary studies of one of the middens (Coutts 1977) revealed a large occupation deposit, radiocarbon dated at 2450 ± 100 B.P. associated with a rich assemblage of shellfish (predominantly *Subninja undulata*), animal bones (including those of snake, rat, wallaby, emu, bandicoot and bird) and stone tools (mostly made from coastal flint). There is also some evidence of bone tool manufacture.

Despite uncertainties about the origins of much of the surface material from these sites and about stratigraphy of the sites, it is evident that the area was visited by Aborigines for some thousands of

years. Bone and stone tools were manufactured there, and although collecting shellfish was the main activity, Aborigines appear to have hunted terrestrial animals further inland and brought them back to the coastal camps.

Midden deposits investigated by Lourandos (1976) at Seal Point near Cape Otway are similar to those at Armstrong Bay. Since they were more than 1 m deep, the implication is that Aborigines returned to the site periodically. Rich faunal remains indicate a varied diet, including shellfish, seal, small terrestrial animals and some fish. The site contained an assemblage of bi-points and evidence that the Aborigines made stone tools. The stone industry is apparently unsophisticated; that is, the tools have relatively little retouch. The most interesting feature of this site is a cluster of large circular depressions which Lourandos (1976: 188) believes may be the remains of sleeping pits. Although no radiocarbon dates are available for the site, the excavator considers it to be comparatively recent.

Three other sites excavated in western Victoria, situated in the hinterland but not far from the coast, are probably base camps. The first is a midden in a cave at Bridgewater about 1.5 km from the coast, near Portland (Lourandos 1976). The occupants collected shellfish, hunted medium to large land mammals and made a fairly sophisticated range of stone tools, including backed blades. Bone points do not appear to have been manufactured. Lourandos suggests that the differences between the assemblages at Seal Point and Bridgewater Caves are functional, and that the latter site is a temporary hunting camp. However, the differences could be a result of

TABLE 4
RATIO OF MEAT VOLUME (ML) TO DEAD WEIGHT OF SHELL, FOR SELECT SPECIES OF MOLLUSCS COMMONLY FOUND IN
ARCHAEOLOGICAL DEPOSITS

Environment	Species	Ratio of volume of meat (ml) to dead weight of shell (g)	Method of of harvesting	Energy input
Rock platform:				
	<i>Notohalotis ruber</i>	2.50	hand picked	high
	<i>Cellana tramoserica</i>	0.92	hand picked	high
	<i>Brachidontes rostratus</i>	0.83	scraped off rocks	low
	<i>Dicathais textilosa</i>	0.65	hand picked	high
	<i>Subninja undulata</i>	0.48	hand picked	high
	<i>Mytilus planulatus</i>	0.45	scraped off rocks	low
	<i>Cabestana spengleri</i>	0.35	scraped off rocks	high
	<i>Austrocochlea constricta</i>	0.34	scraped off rocks	high
Sandy beach:				
	<i>Plebidonax deltoides</i>	0.32	dredged	low
	<i>Anadara trapezia</i>	0.20	dredged	low

differences in age; the contents of the midden in the cave seem to be more those of a base camp.

The other two hinterland sites are 3 km from the coast at Glenaire, Cape Otway. Mulvaney (1962) has used data from these sites to synthesise the most recent period of Victorian prehistory. He obtained a date of 370 ± 45 B.P. from one of them. His excavations revealed an extensive bone-working industry and a large number of stone artefacts made from a variety of rock types, although 90% of them were flint. Of 2 278 stone flakes excavated only four had been retouched, though many seem to have traces of use (Fullagar pers. comm.). The sites at Glenaire and Seal Point are comparable in this respect.

A notable feature of the Glenaire sites is the large quantity of rock platform shellfish. The rich variety of faunal materials from these sites indicates an economy based on shellfish and small land animals.

Discussion

Dates for these base camps have a long time span beginning more than 5 000 years ago. However, they share some features such as evidence for variable economies. They also have differences. For example middens in the Bridgewater cave and at Armstrong Bay contained backed blades, whereas middens at Seal Point and Glenaire did not. These differences may be chronological or functional, but backed blades seem to disappear from the Aboriginal tool kit in other parts of Australia during the early part of the first millennium B.P.

Bone tools are found at Armstrong Bay, Seal Point and Glenaire. They were manufactured at Armstrong Bay as early as 2 450 B.P. but there is not yet sufficient evidence to identify manufacturing techniques over a period of time; only two consistent types can be distinguished. The first, a uni-point tool usually 15-25 cm long, manufactured from a kangaroo fibula, has a spatulate to tapering point which is usually very worn. The other type is a bi-point, 5-7 cm long. Some of the bi-points are made from solid bone and have a blunt and a sharp end; others are symmetrical and made from light hollow bone.

There is no ready explanation for the large number or function of bone tools at these sites. The points may have been used to prize flesh from the shells of *Subnina undulata* (Mitchell 1958). A spatulate bone point in the National Museum carries a note by Mr Castwood, Port Fairy, 1849, suggesting that it was an 'Aboriginal chisel made

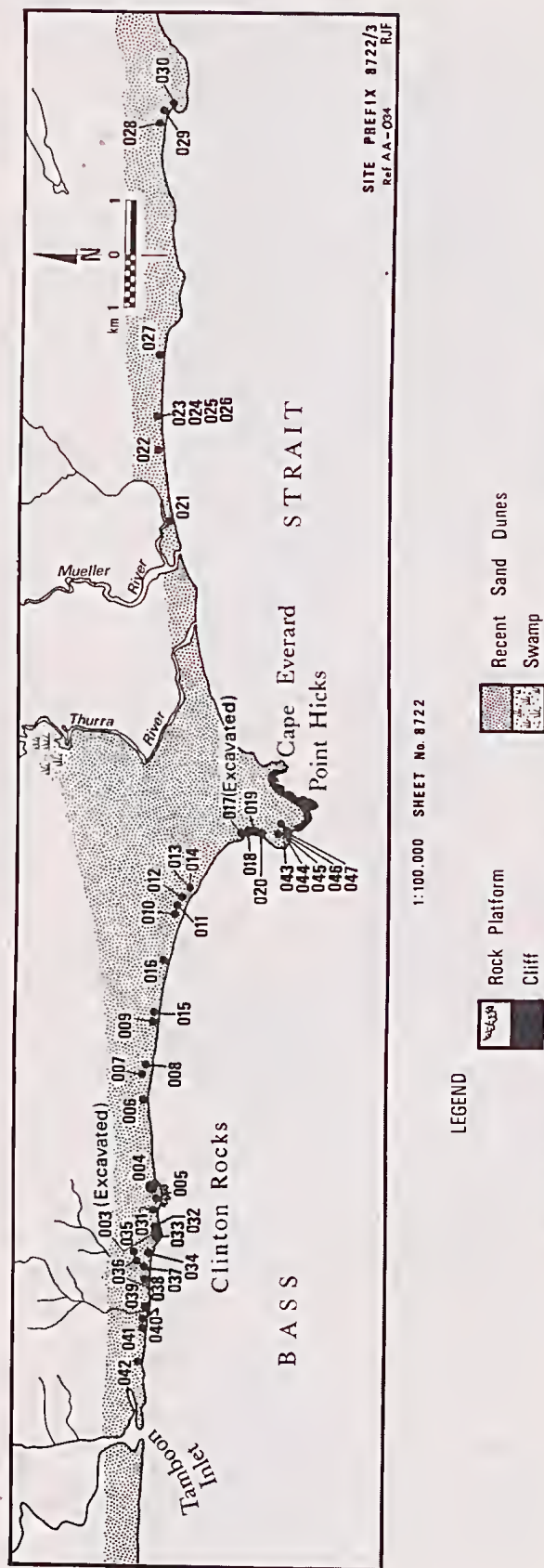


Fig. 3—Tamboon Inlet—Cape Everard study area: distribution of archaeological sites

from the leg of a kangaroo, and used for cutting out the handle of the wooden shield'. However, the uni-points made from kangaroo fibula were probably generalised tools because they show a multitude of shapes and variable wear. Many have hinge snaps indicative of excessive stress. Bi-points were probably the tips of fishing spears, or gouges. Other functions for bone tools are listed in the ethnographic literature (e.g. Smyth 1878).

The bone implement assemblage at Glenaire is different to that at Armstrong Bay, lacking the spatulate uni-points made from kangaroo fibulae. It is dominated by bi-points, mainly the asymmetrical type, which are most similar to those described as points for fishing spears.

Faunal remains from the sites discussed above indicate that the Armstrong Bay and Clinton Rocks sites were occupied at least sometime during spring-summer. Evidence from other sites is not available or is inconclusive.

EASTERN VICTORIA

Temporary camps have been investigated in the foreland at Wilsons Promontory and Clinton Rocks and inland at Cloggs Cave and East Buchan. Base camps located in the foreland at Wilsons Promontory, Point Hicks and Captain Stevensons Point have been studied in detail.

Temporary camps

At Wilsons Promontory, field studies and excavations by the author have uncovered middens which are basically heaps of *Plebidonax deltoides* shells. One of these sites has been dated as $1\,260 \pm 90$ B.P. (Coutts 1970: 25). Others have sparse scatters of flint and quartz flakes as well as the shells.

The site at Clinton Rocks is a concentrated deposit of marine shells showing no evidence of long breaks in occupation. At least nine shell layers are present. Layers 5 and 9 have been radiocarbon dated as 220 ± 90 B.P. and 360 ± 90 B.P. respectively (Coutts & Witter 1977), making this site broadly contemporaneous with those at Glenaire.

The dominant fauna at Clinton Rocks was the mussel *Brachidontes rostratus*, available from rock platforms nearby. The site also contained some fish, crabs, crayfish and terrestrial animals, including brush-tail possum and wallaby or kangaroo. It contained no evidence of workshop activity, though two pieces of burinated bone were recovered. The remarkable feature of this site is

the continuity in economic remains, a feature also noted at Thunder Point.

Two sites have been excavated in the hinterland, although they are not far from the coast. They are Cloggs Cave (Flood 1974) near Buchan, and a small rock shelter also near Buchan (Anon. 1966, Gallus pers. comm.). Few details are available for the latter. The data from the Cloggs Cave excavations suggest that it was a temporary camp throughout much of its 9 000 years of occupation.

Base camps

Two categories of base camp have been identified at Wilsons Promontory (Coutts 1970). 'A' series sites are associated with the last phase of stabilisation of the Pleistocene dunes. 'B' series sites are much younger. 'A' series sites typically contain lenses of shells embedded in a thick soil which caps the Pleistocene dunes. They date from about 6 500 B.P. and are associated with scatters of stone artefacts including hammerstones, anvils, cores, scrapers and a variety of flake and blade tools, such as backed blades, made from various materials (Table 5). There is very little bone in the deposits.

The second type of base camp—'B' series—also generally contains backed blades and other artefacts made of various materials (Table 5). However, the most recent sites do not contain backed blades and most of the tools in these sites are made from flint or quartz. Many of these sites contain the remains of small animals. Occasionally bone points are found. A distinct difference between the 'A' and 'B' series is the predominance of *Plebidonax deltoides*, a sandy beach species of shellfish, in the 'B' series sites. In contrast, the 'A' series middens are dominated by *Subnina undulata* and *Cellana* sp. from rock platforms.

The Point Hicks site contains several archaeological horizons and dates from 1 100 B.P. It is about 20 km from the Clinton Rocks site but, unlike the latter, is dominated by *Subnina undulata*. The remains of seal, dolphin and whale were found at the site. Analysis of the seal remains suggests that whole carcasses were dragged up to the site. Such mammals could have been a staple meat source, although there is evidence that the Aborigines fished and also hunted birds. No terrestrial animals are represented at the site.

Abundant stone flakes, some with secondary working, had been made from various materials (quartz, quartzite and chert). Artefacts include backed blades, hammerstones and numerous waterworn pebbles, some burnt. There is evidence

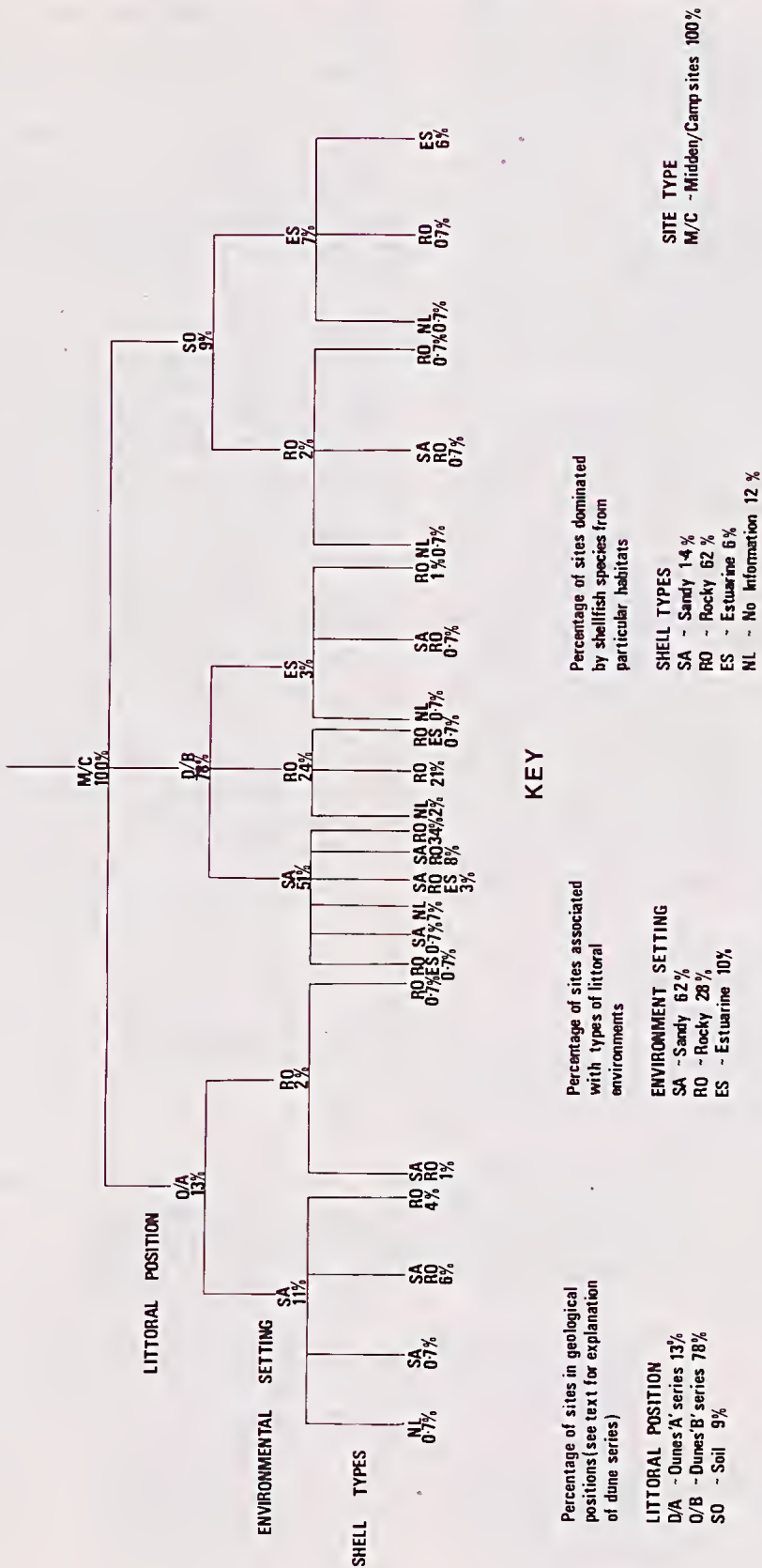


FIG. 4—Site classification of coastal middens: dendrogram

that bone points were made at the site. In summary, the Point Hicks site is similar to many of the earlier sites at Wilsons Promontory, except that the latter are not associated with animal remains or bone points.

Similar types of sites are found in many areas of the coast including Jack Smith Lake, Lake Denison and Marilyns Beach.

At Captain Stevensons Point, Mallacoota, there is an extensive midden on the cliff overlooking the inlet. Materials from excavations at this site are still being analysed, but preliminary assessments suggest that it is one of the richest coastal sites investigated in Victoria.

The inhabitants of the site exploited a wide range of habitats. From the inlet itself they collected shellfish (*Ostrea angasi* and *Anadara trapezia*) and caught fish (snapper or bream); from the rock platform areas, probably somewhere near Bastion Point, they collected shellfish (*Mytilus planulatus*, *Subrinella undulata*, *Cellana* sp., *Dicathais textilosa* and *Cabestana spengleri*) and hunted seals; and in the surrounding woodlands they hunted terrestrial animals (such as wallaby and bandicoot). Stone tools have been found at this site (quartz is the most common material), though no readily recognisable tools or retouched specimens were found. Several large pointed and polished bone tools, some made from kangaroo fibulae, were recovered. The presence of several pieces of cut or damaged bone suggests that tools were made at the site.

This large site appears to have been occupied more or less continuously, although the Aborigines appear to have exploited different food resources at various times. Judged on its contents, the site belongs to the most recent period of Victorian prehistory.

Preliminary surveys in this area suggest that there are many similar sites around the margins of the inlet, reflecting the rich food resources of the area.

Discussion

These limited data are not vastly different to those described for western Victoria. Evidence of a change in materials and types of tools used over the centuries is a little stronger at the Wilsons Promontory sites. The latest sites do not contain backed blades, and the materials used in these sites are largely flint and quartz. Bone tools are found more frequently in these archaeological assemblages, though this might well be attributed to relatively favourable preservation conditions.

Once again economic variability is a feature and technological variability is also evident. For example, Aborigines at Marilyns Beach produced backed blades by notching a blade and then snapping it (Clark & Pickering 1978); Aborigines at Wilsons Promontory made backed blades by preforming blades on cores, striking them off and then retouching.

Faunal remains from Wilsons Promontory ('A' and 'B' sites) and Captain Stevensons Point in-

TABLE 5
THE WILSONS PROMONTORY STUDY AREA: SUMMARY OF ARCHAEOLOGY

Type and environment of site	Material culture	Economy	Approx. age range
'A' series summit of old Pleistocene dunes	backed blades, hammerstones, anvils, fabricators, chalcedony, quartzite and chert; local material including flint and quartz; ochre	shellfish gathering almost exclusively from rocky shore platforms but also from bay environments	3,000-6,500 B.P.
'B' series northern end of isthmus	backed blades, edge-ground axes, unifacial tools, scrapers, hammerstones, chert, quartzite, quartz and flint	shellfish gathering predominantly from sandy beach	?
overlying 'A' series at southern end of beach and occurring in a number of areas at northern end of beach	few finished tools, but includes hammerstones, unifacial tools, edge-ground axes, scrapers. Materials predominantly flint and quartz	shellfish gathering from rock platform and sandy beach. Hunting of fish, birds and terrestrial mammals	1,000 B.P. down to and including the early contact period

licate occupation at least some time during spring-summer.

CONCLUSION

While some broad trends in the contents of midden sites can be discerned, the regional variation in the contents of coastal midden sites is considerable. What is needed now are more detailed studies of small areas of the Victorian coastline so that these variations can be identified. Areas of particular interest are structures (e.g. hearths, sleeping pits and house plans), variation in manufacturing technologies (which may reflect different ranges of activities, methods of manufacture and material usage), and variability in economic strategies such as methods of harvesting shellfish from different habitats or degrees of dependence on particular types of hunter-gathering.

Determining the seasonality of midden sites is another priority. Methods are being developed in Australia but more work is urgently required if site patterns are to be properly understood. Although a number of potential food resources available in the coastal region are seasonal, they are rarely found in archaeological deposits. Many of those that do occur are ambiguous seasonal indicators, often only of spring and summer periods.

Finally, because such a large proportion of Victorian coastal archaeological remains have already been destroyed, there is an urgent need for a research and site protection programme for those remaining. Unless this is done in the near future, potentially rich sources of information will be lost.

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